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EXAMINER

LEUNG, JENNIFER A

ART UNIT PAPER NUMBER

1764

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/379,481

Applicant(s)

BENJE, MICHAEL

Examiner

Jennifer A. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2004 and 17 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4,5,8,9,12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4,5,8,9,12 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment submitted on May 26, 2004 and supplementary amendment submitted on June 17, 2004 have been received and carefully considered. Claims 1-3, 6, 7, 10 and 11 are cancelled. Claims 4, 5, 8, 9, 12 and 13 remain active.

Response to Arguments

2. Applicant's arguments with respect to claims 4, 5, 8, 9, 12 and 13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claims 4, 5 and 13 are objected to because of the following informalities:

claim 4, line 4: "at said reactor" should be changed to -- in said reactor --.

claim 5, line 4: the letter "a" in the phrase "a said dome part" should be deleted.

claim 5, line 7: the word -- chamber -- should be inserted after "each" for clarity in the language of the claim.

claim 13, line 10: the word -- removed -- should be inserted before "respectively" for clarity in the language of the claim.

claim 13, line 11: the words -- that are -- should be inserted before "separated" for clarity in the language of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 4, 5, 8, 9, 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, it is unclear as to the structural limitation applicant is attempting to recite by, "each [chamber] having an outlet for a main gas stream to a quench vessel and for a bypass gas stream," (which implies each chamber comprising two outlets, one for the main gas stream and one for the bypass gas stream), and where it is disclosed in the specification and drawings. As shown in Fig. 1, for instance, each chamber 6 and 6a only comprises a single outlet for either a bypass gas stream 8 or a main gas stream 11, and not both. Also, it is unclear as to the structural limitation applicant is attempting to recite by, "said filter cartridges being assigned to the main gas stream," in lines 8-9, because the filter cartridges as set forth in line 4 are already assigned to the baseplate, located within the dome part of the reactor, and therefore the filter cartridges cannot also be assigned to (i.e., interpreted as being "located in") the main gas stream. Furthermore, it is unclear as to the structural limitation applicant is attempting to recite by, "filter elements assigned to the bypass gas stream and having a pore size differing from that of the filter cartridges," in lines 10-11, and where it is disclosed in the specification and drawings, because the filter elements 5a as shown in Fig. 1 are assigned to the baseplate, located within the dome part of the reactor, and therefore the filter elements cannot also be assigned to (i.e., interpreted as being "located in") the bypass line 8. Furthermore, if applicant intended for two outlets per chamber for both the bypass gas stream and the main gas stream, it is unclear as to how the "dust particle fraction" of the bypass gas stream could differ from the dust particle fraction in main gas stream, as both gas stream would exit from a common chamber space in the

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dome part of the reactor, and would therefore contain identical dust particle fractions.

Regarding claim 13, "the fine dust particles" (line 3) lacks positive antecedent basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lork et al. (DE 195 46 068).

Lork et al. (FIG. 1, 2; Abstract) discloses a method of removing dust particles (i.e., the "rubbed off catalyst particles", or abraded catalyst particles) from a fluidized bed reactor for oxychlorination of ethylene (i.e., fluidized bed reactor 7, for reacting ethylene 5 with HCl 1 and oxygen 3), comprising the steps of:

- a) removing the fine dust particles collected in the fluidized bed reactor 7 via a first cyclone separator 8, a dust sampler 26 containing filter cartridges (not labeled), and a second cyclone separator 47;
- b) passing a reaction gas mixture (i.e., the 1,2-dichloroethane gas flow exiting reactor 7 by line 25) to a quench vessel (i.e., to condensation stage 9, wherein the gas mixture in line 40 is cooled down with water supplied from separation container 12 over line 18); and
- c) removing a partial gas stream as a bypass gas stream (i.e., stream 49; FIG. 2) in addition to a main gas stream (i.e., stream 40; FIG. 1), wherein said bypass gas stream has a predetermined content of dust particles of a size which is smaller than a predetermined

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particle size (i.e., stream **49** contains abraded catalyst particles having a particle size of less than 5 μm ; FIG. 2).

Lork et al. is silent as to the fine dust particle removal in step a) being conducted with sintered metal filter cartridges. Also, Lork et al. is silent as to the instantly recited configuration for reactor **7**, wherein the main gas stream and bypass gas stream are, respectively, removed from two separate spaces of a dome part of the reactor. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select other well known, suitable, structural means for conducting the method of Lork et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the substitution of known equivalent structures merely involves ordinary skill in the art, and furthermore, apparatus limitations, unless they affect the process in a manipulative sense, have little weight in process claims. *In re Tarczy-Hornoch* 158 USPQ 141, 150 (CCPA 1968); *In re Edwards* 128 USPQ 387 (CCPA 1961); *Stalego v. Heymes* 120 USPQ 473, 478 (CCPA 1959); *Ex parte Hart* 117 USPQ 193 (PO BdPatApp 1957); *In re Freeman* 44 USPQ 116 (CCPA 1940); *In re Sweeney* 72 USPQ 501 (CCPA 1947). In this case, the cyclone separators **8** and **47** and the dust sampler **26** of Lork et al. function equivalently to the sintered metal cartridges as recited by Applicants, since each element affects the process similarly by enabling the separation of catalyst particles from the effluent gas stream that exits the fluidized bed reactor. Additionally, the differing locations for the bypass gas stream **49** and main gas stream **40** in the apparatus of Lork et al., relative to Applicant's recited locations, affect the process similarly in that both configurations enable the separation of a partial stream containing dust particles of a size smaller than a predetermined particle size from the system, the end result being that the passage of dust fractions is controlled.

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6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lork et al. (DE 195 46 068) in view of Bohl et al. (US 3,296,319).

Lork et al. discloses the method of controlling the catalyst particle size within the fluidized bed reactor 7, but is silent as to the method further comprising the step of: analyzing a catalyst sample and/or a change in the heat transfer and/or a deterioration of the fluidization behavior in the reactor, and switching on or off the bypass gas stream 49 according to the analysis (for instance, by utilizing the rotary valve as indicated by reference 31; FIG. 1). Bohl et al. teaches a similar method for controlling the catalyst particle size within a fluidized bed reactor during the oxychlorination of ethylene (column 3, line 59 to column 4, line 10), wherein the method further comprises the step of periodically removing samples of catalyst during the operation of the reactor and conducting a screen analysis in order to determine that (1) at least 75 percent of the bed or more is in the 30 to 60 mesh size range and that (2) of the total catalyst present in the bed at least 10 percent of it falls within the range of 50 to 60 mesh. (column 3, lines 49-58). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the additional step of analyzing a catalyst sample in the method of Lork et al. because the analysis would provide an additional mechanism for controlling the oxychlorination reaction, by monitoring whether the particle size distribution is within a desired range and allowing for an operator to adjust the process conditions accordingly in order to maintain the desired range, as taught by Bohl et al. Maintaining a given particle size distribution is critical to the oxychlorination reaction, as it determines the change in heat transfer throughout the bed (column 2, lines 27-64).

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Allowable Subject Matter

7. Claim 5, 8, 9 and 12 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Ertl et al. is provided to illustrate the state of the art of filtering out abraded catalyst particles in a fluidized bed reactor for the oxychlorination of ethylene.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung *JAL*
September 15, 2004

Hien Tran
HIEN TRAN
PRIMARY EXAMINER